

REMARKS

Claims 1, 3, and 5-16 remain in the application and stand rejected.

Reconsideration of the rejection is respectfully requested in light of the following reasons.

Franke and Dreschel

Claims 1, 3, 5-12, and 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,448,622 to Franke et al. ("Franke") in view of U.S. Patent No. 6,773,401 to Dreschel et al. ("Dreschel"). The rejection is respectfully traversed.

Claim 1 is patentable over the combination of Franke and Dreschel at least for reciting: "forming a micro-electro-mechanical system (MEMS) structure over the first protective layer, the MEMS structure including a movable element that is formed using a **deposition process** at a temperature of **at least about 700°C**" (emphasis added). The last office action suggests that Franke teaches high temperature deposition processes for movable MEMS structures using poly-SiGe and poly-si deposition. Applicants respectfully disagree with this conclusion.

The gist of Franke is to form MEMS structures using **low temperature** processes. Franke proposes to do so by replacing poly-si with poly-ge in the fabrication of MEMS structures (Franke, col. 4, lines 32-35). Accordingly, at a deposition temperature of 650°C or less, about 550°C to even 325°C (Franke, col. 5, lines 8-22), poly-SiGe deposition can hardly be called a high temperature process. Franke specifically avoids high temperature processes – hence the use of poly-SiGe.

In fact, Franke **teaches away** from the use of high temperature process, such as poly-si deposition, in methods where the transistors are fabricated first, as in claim 1 (Franke, col. 1, lines 31-43). According to Franke:

While this "MEMS-last" strategy is **infeasible for poly-Si microstructures** because the deposition and stress-annealing temperatures for poly-Si films are

much too high for aluminum or copper interconnects to survive, the MEMS-last strategy is nonetheless very desirable.

Franke, col. 1, lines 39-43 (emphasis added)

That is, Franke teaches one of ordinary skill in the art that it is **infeasible** to use poly-Si in fabrication methods where MEMS structures are formed last (i.e., after fabrication of the electronic circuits).

Dreschel does help Franke in regard to the fabrication steps of claim 1. Therefore, it is respectfully submitted that claim 1 is patentable over Franke and Dreschel.

Claims 3 and 5-8 depend on claim 1, and are thus patentable over Franke and Dreschel at least for the same reasons that claim 1 is patentable.

Similar to claim 1, claim 9 is patentable over the combination of Franke and Dreschel at least for reciting: “forming a capacitive micromachined ultrasonic transducer (CMUT) over the protective layer, **the CMUT including a membrane that is formed using a high temperature process**, the plurality of transistors and the CMUT being formed on a same substrate” (emphasis added).

Claims 10-12 and 14-16 depend on claim 9, and are thus patentable over Franke and Dreschel at least for the same reasons that claim 9 is patentable.

Hoshino and Franke

Claims 1, 3, 5-12, and 14-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,571,661 to Hoshino (“Hoshino”) in view of Franke. The rejection is respectfully traversed.

The last office action proposes to modify the teachings of Hoshino and Franke such that a protective layer is formed over Hoshino’s transistors. It is respectfully submitted that there is no motivation to combine Hoshino and Franke as they teach two completely different processes. Firstly, there is no teaching in Hoshino or Franke how such a protective layer may be formed over Hoshino’s transistors without interfering with

the fabrication or operation of Hoshino's microstructure. Secondly, Franke's process involves a low temperature deposition process, which is incompatible with Hoshino's. In fact, Franke **teaches away** from using high temperature processes in the formation of MEMS structures (Franke, col. 1, lines 39-43). Therefore, there is no motivation for one of ordinary skill in the art to combine Hoshino and Franke to read on the present claims as Franke **counsels against** the method of claim 1. Claim 1 is thus patentable over the combination of Hoshino and Franke.

Claims 3 and 5-8 depend on claim 1, and are thus patentable over Hoshino and Franke at least for the same reasons that claim 1 is patentable.

Claim 9 is similarly patentable over the impermissible combination of Hoshino and Franke.

Claims 10-12 and 14-16 depend on claim 9, and are thus patentable over Hoshino and Franke at least for the same reasons that claim 9 is patentable.

Conclusion

For at least the above reasons, it is believed that claims 1, 3, and 5-16 are in condition for allowance. The Examiner is invited to call the undersigned at (408)436-2112 for any question.

Respectfully submitted,
James A. Hunter, et al.

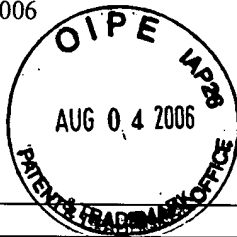
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Response To Office Action

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